

heavy rains were reported along the coasts of Oregon and Washington, the maximum monthly amount exceeding 15 inches in extreme northwest Washington. In portions of the Great Lake region, Ohio Valley, New England, and some adjacent territory the monthly falls ranged from 2 to 4 inches, and over small areas in these districts the amounts for the month were slightly in excess of the normal. Elsewhere precipitation was usually far less than normal, and generally insufficient for local needs.

#### SNOWFALL.

In the mountain regions of the West snow occurred at most of the higher elevations, the total fall in portions of the Sierra amounting to a foot or more, and larger amounts were reported in the high mountains of Washington. In the Rocky Mountain system snow was general,

the greatest depths, amounting to nearly 2 feet, being reported from southwestern Colorado. East of the Rocky Mountains snow occurred over most of the northern border States and in some cases as far south as the Ohio River, but the amounts were usually no more than traces.

#### RELATIVE HUMIDITY.

The generally dry condition of the atmosphere, apparent from the long periods without material precipitation, is clearly indicated by the negative departures from the normal of the average relative humidity for the month. In practically all portions of the country the relative humidity was less than the normal for the month, and in portions of the Great Plains and Rocky Mountain districts the averages were frequently from 10 to nearly 30 per cent deficient.

#### SEVERE LOCAL STORMS.

The table herewith contains such data as have been received concerning severe local storms that have occurred during the month. A more complete statement will appear in the Annual Report of the Chief of the Weather Bureau.

Place.	Date.	Time.	Width of path.	Loss of life.	Value of property destroyed.	Character of storm.	Remarks.	Authority.
Florida.....	23-25		Yards.			Hurricane and tidal wave.	Severe West Indian hurricane passed over portion of State, causing large property damage and some loss of life. Full details elsewhere in this REVIEW.	Official, U. S. Weather Bureau.
Sacramento, Calif.....	26	2:45 to 2:55 p. m.			\$17,000	Small tornado.....	Considerable damage to roofs and buildings under construction.	Do.
Angloes, N. J.....	31	p. m.		11		Wind.....	Two fishing boats capsized, drowning 11 men...	New York Tribune (New York, N. Y.).

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#### STORMS AND WEATHER WARNINGS.

##### WASHINGTON FORECAST DISTRICT.

*Storm warnings.*—There was marked activity in the movement of areas of low pressure across the country during the greater part of the month, which was in striking contrast to the stagnant conditions that prevailed during October, 1920, and storm warnings were displayed on approximately half the days of the month on some portion of the Atlantic or East Gulf coasts or the Great Lakes.

The first disturbance of marked intensity that crossed the Washington district was central over western New York at 8 p. m. of the 7th, moving rapidly northeastward, and southwest storm warnings were issued at 9:30 p. m. for the Atlantic coast from Delaware Breakwater northward. The next warnings were issued for Lake Ontario and eastern Erie at 9:30 a. m. of the 9th in connection with a disturbance that was central over Lake Huron and moving rapidly eastward.

At noon of the 10th a disturbance of considerable intensity was central over western New York moving quite rapidly northeastward and southwest warnings were immediately ordered for the Atlantic coast from Delaware Breakwater northward.

The next storm of importance was central over lower Michigan on the morning of the 18th and moving northeastward, and southwest storm warnings were ordered for Lakes Huron, Erie, and Ontario. On the following day another disturbance was central over northern Lake Michigan, moving rapidly east-southeastward, and warnings were issued at 2 p. m. for Lakes Superior, Michigan,

and northern Huron. Two days later still another disturbance of marked intensity moved rapidly eastward over northern Minnesota and the northern Lake region, and southwest storm warnings were issued at 9:30 p. m. of the 21st for Lake Superior and the northern portions of Lakes Michigan and Huron. The following morning the warnings were extended over Lakes Erie, Ontario, and southern Huron, and at 1:30 p. m. southwest warnings were issued for the Atlantic coast from Sandy Hook northward. The highest velocity reported in connection with this storm was 72 miles an hour from the southwest at Buffalo, N. Y.

On the 25th there was a strong area of high pressure over Ontario and a disturbance of marked intensity central over Kansas, moving slowly northeastward. At 5 p. m. northeast storm warnings were ordered for the Great Lakes, except Ontario and eastern Erie. This storm decreased greatly in intensity as it moved northeastward from Kansas to Minnesota and verifying velocities were reached at only a few stations.

Storm warnings were issued for the East Gulf coast and the Atlantic coast as far north as the Virginia Capes well in advance of the tropical storm that passed over the Florida Peninsula on the 25th. The complete history of this storm and the warnings issued in connection therewith are given on pages 567-570 of this REVIEW.

*Frost warnings.*—Warnings of frost were issued on numerous dates for various portions of the Washington forecast district. These warnings were for a limited area, as a rule, except on the 8th, 11th, 12th, and 13th, when they were for a considerable portion of the district.—*Charles L. Mitchell.*